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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,459	07/17/2002	Sea-Weng Yong	ACMP0027USA	5808

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EXAMINER	
JORGENSEN, LELAND R	

ART UNIT	PAPER NUMBER
2675	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/064,459	YONG ET AL.	
	Examiner	Art Unit	
	Leland R. Jorgensen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 10, 13, 14, 15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Helms, USPN 5,760,760.

Claim 10

Helms teaches a device for controlling the illumination of a backlight of a liquid crystal display (LCD). Helms, col. 1, lines 5 – 8. The device comprises a light sensor [photodetector or light sensor 14] capable of measuring an ambient light intensity to generate a corresponding measured ambient light intensity value [ambient light or AL signals] and an LCD [liquid crystal display panel (LCD) 12]. Helms, col. 3, lines 14 – 50; and figures 1 & 2. Helms teaches a light source for illuminating the LCD. Specifically Helms describes a Backlight driver circuitry 213 to control the brightness level of the LCD 12. Helms, col. 3, lines 35 – 39. Helms teaches a memory [204b] comprising a selection program to select a desired apparent light source brightness value [user selected brightness level or USBL] stored in a portion of the memory. Helms, col. 3, lines 39 – 50. A calculation program generates a light source intensity value [brightness control or BC signal] based on the ambient light intensity value [AL signals] and the desired apparent light source brightness value [USBL signal]. Helms, col. 3, line 35 – col. 4, line

51; and figure 3. A control program to control the light source according to the light source intensity value [BC signal]. Helms, col. 3, line 35 – col. 4, line 51; and figure 3. A processor [microprocessor 204a] executes the programs of the memory. Helms, col. 3, lines 26 – 41; and figure 2.

Claim 13

Helms teaches that the memory further comprises a plurality of desired apparent light source brightness value relationships [automatic brightness level or ABL] stored in a nonvolatile portion of the memory. Helms, col. 3, lines 51 – 54.

Claim 14

Helms teaches a user interface [control knob 16] that allows a user to select a desired apparent light source brightness value according to the selection program and further to modify desired apparent light source brightness values. Helms, col. 3, lines 35 – 50; col. 4, lines 52 – 58; and figure 2.

Claim 15

Helms teaches that the light source intensity value is set high when the ambient light intensity value is low and the desired apparent light source brightness value is high, and the light source intensity value is set low when the ambient light intensity value is high and the desired apparent light source brightness value is low. Helms, col. 2, lines 19 – 24; and col. 4, lines 52 – 58.

Claim 16

Helms teaches that the light sensor is a photodiode [14]. Helms, col. 3, lines 14 – 21; and figures 1 & 2.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 – 3, 6, 7, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Chang US 2002/0159002 A1.

Claim 1

Helms teaches a method for controlling illumination of a backlight of a Liquid Crystal Display (LCD). Helms, col. 1, lines 5 – 8. The method comprises providing a light sensor [photodetector or light sensor 14] capable of measuring an ambient light intensity to generate a corresponding measured ambient light intensity value [ambient light or AL signals]; providing a processing circuit [brightness control circuitry] for interpreting the measured ambient light intensity value; providing a light source [backlight driver circuitry 213] that is controllable by the processor [microprocessor 204a]; providing an LCD device [liquid crystal display panel (LCD) 12] capable of being illuminated by the light source; with the processing circuit calculating a light source intensity value [brightness control or BC signal] based on a desired apparent light source brightness value [user selected brightness level or USBL] and the measured ambient light intensity value [AL signal]. Helms, col. 3, line 14 – col. 4, line 51; and figures 1 – 3.

Helms does not teach triggering the light source to emit light at a time-averaged intensity that corresponds to the calculated light source intensity value.

Chang teaches triggering the light source to emit light at a time-averaged intensity that corresponds to the calculated light source intensity value. Chang, page 2, ¶ 0028. See also Chang, page 2, ¶ 0021.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system and method of backlighting an LCD display including emitting light at a time-averaged intensity as taught by Chang with the method for controlling a backlight as taught by Helms to improve the optical quality of the image produced. Chang invites such combination by teaching,

> In a preferred embodiment of the present invention, a liquid crystal display (LCD) is backlit using an illumination source that consists of a planar array of uniformly distributed red, green, and blue (RGB) light emitting diodes (LEDs), each RGB light source unit illuminating a color filter area consisting of one or more picture element's (pixel) filter triads. By controlling the current through each LED unit, infinite variations in intensity and color points can be locally generated at the pixel or group of pixels location. Control of each RGB color element allows for color variations in major LCD driving directions electronically to provide a significant improvement in the optical quality of an image.
>
> A computing device partitions the RGB backlight color cells of the LCD into pixel groupings and configurations according to a desired color property of an image. The RGB backlight cells are generated by using cyclic, rigid motion, and deformation transforms of a unit RGB cell. The ultimate size of RGB backlight cells in determined by the size of the LCD panel and the associated panel addressing schemes.

Chang, page 1, ¶¶ 0005 – 0006.

Claim 2

Chang teaches that the light source is a light emitting diode (LED). Chang, page 1, ¶ 0017. Chang teaches that the control program calculates a driving duty cycle for the LED, a time-averaged intensity of the LED corresponding to the driving duty cycle calculated by the control program. Chang, page 2, ¶ 0028. See also Chang, page 2, ¶ 0021.

Claim 3

Helms teaches that the light sensor is a photodiode [14]. Helms, col. 3, lines 14 – 21; and figures 1 & 2.

Claim 6

Helms teaches a user interface [control knob 16] that allows a user to select a desired apparent light source brightness value according to the selection program and further to modify desired apparent light source brightness values. Helms, col. 3, lines 35 – 50; col. 4, lines 52 – 58; and figure 2.

Claim 7

Helms teaches a memory [204b] in which the desired apparent light source brightness value [user selected brightness level or USBL] is stored. Helms, col. 3, lines 39 – 50. A processor [microprocessor 204a] fetches the desired apparent light source brightness value [USBL] from the memory to calculate the calculated light source intensity value [brightness control or BC signal]. Helms, col. 3, lines 26 – 41; and figure 2.

Claim 11

Chang teaches that the light source is a light emitting diode (LED). Chang, page 1, ¶ 0017.

Claim 12

Chang teaches that the control program calculates a driving duty cycle for the LED, a time-averaged intensity of the LED corresponding to the driving duty cycle calculated by the control program. Chang, page 2, ¶ 0028. See also Chang, page 2, ¶ 0021.

5. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms or over Helms in view of Chang as applied to claims 1 and 3 above, and further in view of Van Antwerp, USPN 4,514,727.

Claims 4 and 17

Helms teaches an analog to digital converter [204c] to process signals received from the photodiode to generate the measured ambient light intensity value. Helms, col. 3, lines 30 – 34; and figure 2.

Neither Helms nor specifically teach a current to voltage converter.

Van Antwerp teaches a current to voltage converter to process signals received from the photodiode 12 to generate the measured ambient light intensity value. Van Antwerp, col. 4, lines 57 – 61.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the current to voltage converter as taught by Van Antwerp with the device as taught by Helms or the method as taught by Helms in view of Chang to convert the current output of a photodiode to a analog voltage that can be converted to digital output.

6. Claims 5 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms and Van Antwerp or over Helms, Chang, and Van Antwerp as applied to claims 4 and 17 above, and further in view of Suzuki, USPN 6,078,302.

Claims 5 and 18

Neither Helms, Chang, nor Van Antwerp specifically teach that the LCD device is installed in a mobile phone or a personal digital assistant.

Suzuki teaches an LCD device having an photosensor to detect ambient lighting and to adjust the brightness of the backlight. Suzuki, col. 1, line 60 – col. 2, line 11; and figure 1. Suzuki teaches that the LCD device is installed in a mobile phone. Suzuki, col. 1, lines 25 – 29.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the mobile phone as taught by Suzuki with the device and method as taught by Helms and Van Antwerp or Helms, Chang, and Van Antwerp to reduce power consumption of a battery-powered mobile phone.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms or over Helms in view of Chang as applied to claim 1 above, and further in view of Mawatari et al., UPSN 5,446,564.

Claim 9

Chang teaches that the light source is an LED array. Chang, p. 2, ¶ 0021. It is inherent that each LED emits light at a unique spectral frequency. Chang teaches providing driving duty cycles to the LED array, the time-averaged intensity of each LED of the LED array corresponding to one of the driving duty cycles and adjusting the driving duty cycles according to a plurality of calculated light source intensity values, one of the light source intensity values being used for each LED of the LED array. Chang, p. 2, ¶ 0028.

Neither Helms nor Chang teach that the light sensor is a photodiode array.

Mawatari teaches a light sensor that is a photodiode array. Specifically, Mawatari teaches an LCD display with each pixel having photoelectric converter element 5a, 5b, ..., 5*n*. Mawatari, col. 2, lines 41 – 58; and figure 1. The photoelectric device can be an photodiode.

Thus, the display as shown in figure 1 as Mawatari is a photodiode array. It is inherent that each photodiode is sensitive to a unique spectrum of light.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the photodiode array of Mawatari with the method of Helms and Chang to produce an liquid crystal display device having both functions of inputting data by means of light radiation and displaying the input data. Mawatari, col. 1, lines 47 – 50.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Decker, USPN 6,040,822.

Claim 19

Helms does not teach that a light source illuminates a keypad.

Decker teaches that a light sources illuminates a keypad. Decker, col. 1, lines 8 – 10.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the illuminated keypad as taught by Decker with the device as taught by Helms because it is useful to have an illuminated keyboard to see the keys when it is dark. Decker, col. 1, lines 14 – 50.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Chang as applied to claims 1 and 3 above, and further in view of Decker.

Claim 8

Helms teaches a user interface [control knob 16]. Helms, col. 3, lines 35 – 50; col. 4, lines 52 – 58; and figure 2.

Neither Helms nor Chang specifically teach that the light source illuminates the user interface.

Decker teaches that a light sources illuminates the user interface, specifically a keypad. Decker, col. 1, lines 8 – 10.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the illuminated keypad as taught by Decker with the device as taught by Helms because it is useful to have an illuminated user interface to see it when it is dark. Decker, col. 1, lines 14 – 50.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland R. Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DENNIS-DOON CHOW
PRIMARY EXAMINER